

WHAT IS CLAIMED IS:

1. A data recording method of recording data on a record medium, comprising the steps of:

rearranging an order of words forming a data train under a rule determined by every data train in the data train constituting an error correcting code for recording the data on a record medium; and

recording the data on the record medium in the order of words rearranged.

2. The data recording method according to claim 1, wherein the step of rearranging the order of the words includes a step of rearranging words in a data train which includes a cross Reed Solomon code as the error correcting code.

3. The data recording method according to claim 1, wherein the step of rearranging the order of the words includes a step of rearranging the order of the words except words for identification information.

4. The data recording method according to claim 1, wherein the step of rearranging the order of the words includes a step of rearranging words according to a plurality of different rules.

5. The data recording method according to claim 1, wherein the step of rearranging the order of the words includes a step of rearranging words according to an M-series.

6. The data recording method according to claim 1, wherein the step of rearranging the order of the

words includes a step of rearranging words by the rule according to an arithmetic progression.

7. The data recording method according to claim 1, wherein the step of rearranging the order of the words includes a step of rearranging words by combining a plurality of words as a group.

8. A data recording method of recording data on a record medium, comprising the steps of:

adding error correction data to data recorded on the record medium to generate error correcting codes;

rearranging an order of words forming a data train under a rule determined by every data train in the data train constituting an error correcting code;

modulating the data train which is rearranged in regard to the order of the words; and

recording the data train, which is modulated, on the record medium.

9. The data recording method according to claim 8, wherein the step of rearranging the order of the words includes a step of rearranging the order of words except for identification information.

10. The data recording method according to claim 8, wherein the step of rearranging the order of the words includes a step of rearranging words according to a plurality of different rules.

11. The data recording method according to claim 8, wherein the step of rearranging the order of the

words includes a step of rearranging words according to an M-series.

12. The data recording method according to claim 8, wherein the step of rearranging the order of the words includes a step of rearranging words according to an arithmetic progression.

13. The data recording method according to claim 8, wherein the step of rearranging the order of the words includes a step of rearranging words by combining a plurality of words as a group.

14. A data reproducing method of reproducing data that is modulated and recorded on a record medium, comprising the steps of:

demodulating a data train recorded on the record medium;

rearranging an order of words forming the data train demodulated under a rule determined by every data train; and

correcting errors contained in a data train where order of the words is rearranged.

15. A data recording apparatus, comprising:
a circuit generating error correcting codes for recording data on a record medium;

a signal processing circuit rearranging an order of words forming a data train under a rule determined by every data train in the data train constituting the error correcting code;

a modulation circuit modulating the data

train where order of words is rearranged by the signal processing circuit; and

a pickup for recording the data train, which is modulated, on the record medium.

16. A data reproducing apparatus, comprising:

a demodulation circuit demodulating a data train recorded on the record medium;

a signal processing circuit rearranging order of words forming the data train demodulated under a rule determined by every data train; and

a circuit correcting errors included in a data train where order of words is rearranged by the signal processing circuit.